

Rec'd PCT/PTO 29 SEP 2004

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

**(19) World Intellectual Property Organization  
International Bureau**



**(43) International Publication Date  
23 October 2003 (23.10.2003)**

PCT

(10) International Publication Number  
**WO 2003/086281 A3**

**(51) International Patent Classification<sup>7</sup>:** C08B 37/08

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SK, SL,  
TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW

**(21) International Application Number:**  
PCT/US2003/010560

**(22) International Filing Date:** 2 April 2003 (02.04.2003)

**(25) Filing Language:** English

**(26) Publication Language:** English

**(30) Priority Data:** 60/369,594 2 April 2002 (02.04.2002) US

(71) Applicant (for all designated States except US):  
**CARGILL, INC.** [US/US]; Law Dept/24, 15407 McGinty Road West, Wayzata, MN 55391 (US).

(84) **Designated States (regional):** ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declaration under Rule 4.17:**

— *of inventorship (Rule 4.17(iv)) for US only*

**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

**(88) Date of publication of the international search report:**  
19 February 2004

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

WO 2003/086281 A3

**(54) Title: CHITOSAN PRODUCTION**

**(57) Abstract:** The invention provides a method of producing chitosan using pressures greater than 0 PSIG. The invention also provides fungal chitosan compositions.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/10560

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C08B 37/08  
US CL : 536/20

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
U.S. : 536/20

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
none

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 400 364 A2 (FARHISPANIA S.A.) 05 December 1990 (05.12.1990), see column 1, lines 21-33 and column 2, lines 31-42.	1-8
Y	US 4,978,381 A (HADWIGER) 18 December 1990 (18.12.1990), see column 2, lines 48-61.	9 and 10
Y	ARCIDIACONO, S. ET AL. Molecular Weight Distribution of Chitosan Isolated from <i>Mucor rouxii</i> under Different Culture and Processing Conditions. Biotechnology and Bioengineering 1992, Volume 39, pages 281-286, see Conclusions on page 286.	9 and 10

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application, but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

02 June 2003 (02.06.2003)

Date of mailing of the international search report

05 DEC 2003

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
Facsimile No. (703)305-3230

Authorized officer

*Kathleen Kahler Fonda, Ph.D.*

Telephone No. (703) 308-1235

Form PCT/ISA/210 (second sheet) (July 1998)

**REST AVAILABLE COPY**

INTERNATIONAL SEARCH REPORT

PCT/US03/10560

**Continuation of B. FIELDS SEARCHED Item 3:**

databases: USPAT, US-PGPUB, and DERWENT on EAST

search terms: chitin, chitosan, polyglucosamine, (poly near3 glucosamine), fungus, fungal, fungi, aspergillus, candida, mucor\$, penicillium, "molecular weight", dalton